Achievement of Market-Friendly Initiatives and Results Program
(AMIR 2.0 Program)

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Acronyms

AICP	American Institute of Certified Planners
AMIR	Achievement of Market Friendly Initiatives and Results Program
ASEZ	Aqaba Special Economic Zone
DOA	Department of Antiquities
EA	Environmental Assessment
FOE	Friends of the Earth Middle East
GIS	Geographic Information System
GTZ	German Aid Agency
IQZ	Industrial Zone
JICA	Japan International Cooperation Agency
JVA	Jordan Valley Authority
MOTA	Ministry of Tourism and Antiquities
RSCN	Royal Society for the Conservation of Nature
RSDS	Red Sea to Dead Sea Canal or Pipeline Project
USAID	United States Agency for International Development

Executive Summary

The objective of this 18-day consultancy was to define the expectations, scope, and estimated resources that the United States Agency for International Development (USAID)/Jordan might provide to assist the Jordan Valley Authority (JVA) with its physical land use planning needs. The focus was on analyzing existing land uses including agricultural land, and unused land that might be suitable for commercial and industrial purposes in support of tourism and other sectors, thereby increasing economic opportunities for Jordanians.

Specific tasks of the consultancy included collecting and organizing baseline data through background reading, interviews in Jordan, and site visits with JVA staff to analyze current conditions and proposed projects in the Jordan Valley including the Dead Sea area. The consultancy also included conducting research for potential linkages between land use planning and successful, sustainable economic and tourism development. USAID/Jordan, Office of Economic Opportunities in conjunction with the Water Office, wishes to assist JVA in their efforts to ensure protection and productivity of the Jordan Valley. USAID and JVA recognize that long-term, integrated land use planning and realistic market demand are key to improving and sustaining the Jordan Valley's economy and environmental character.

To date, the only area of the Jordan Valley that has been intensively planned is the Dead Sea area. However, those studies did not include important environmental and economic information, such as a carrying capacity study and market feasibility of dozens of hotels lining the Dead Sea shoreline, nor did they include stakeholder involvement. A Comprehensive Land Use Plan would re-analyze existing and proposed land uses along the Dead Sea, within the broader land use strategy of the Jordan Valley, including Suweimeh, Zara, Al-Himmah, Al-Mazra, Citadel, and Wadi Shuqerq.

JVA's Strategic Plan, completed by PA Consulting in 2002 with USAID funding, recommends that a Comprehensive Land Use Plan be adopted for the Jordan Valley. A Comprehensive Land Use Plan would clearly illustrate that which exists and functional relationships to new land uses. It would evaluate land areas with sensitivity to environmental issues, to promote conservation of environmental features, the Dead Sea, and ground water. It would delineate employment bases and citizens' needs, such as training and employment. It would create tourism linkages to facilitate economic development of tourism and analyze commercial viability of other land uses, such as sustainable agriculture and other industries. In summary, it would help JVA to involve the private sector and local residents in maximizing economic use while helping to conserve precious resources such as water and protecting irreplaceable environmental features like the Dead Sea.

Although the consultant recommends that JVA's Strategic Plan be followed and that a Comprehensive Land Use Plan be completed for the Jordan Valley, including the Dead Sea area, the consultant recognizes that limited financial resources might not allow a comprehensive analysis at this time. Therefore, the consultant illustrates an array of four task and budget scenarios, which are detailed in charts under Section 4.2 of this report. Unfortunately, under Options A and B, there is insufficient fee to complete a Comprehensive

Land Use Plan. Limited in scope, both options would produce a Land Use Study, as team members would not include an environmental scientist, a sociologist, an economist, and a transportation engineer. Through detailed information gathering and drawings, Options C and D would provide USAID and JVA with a sustainable Comprehensive Land Use Plan, including a clear understanding of the Jordan Valley's existing and potential land uses. Both options would include inputs which are not part of Options A and B, i.e., survey of local communities and NGOs regarding stakeholder interests, and up-to-date baseline information on environmental issues, economic information, and transportation issues. With a solid information base, the planners and architects could arrive at a realistic, sustainable land use plan.

The proposed consulting team under Options A and B would include:

- one expatriate land use and tourism planner, who is not the project manager under Option A,
- a local information management firm, who becomes the project manager under Option A,
- a local planning/architecture and engineering firm.

Under Options C and D, the proposed consulting team would grow to include:

- one expatriate project manager, who is also a land use and tourism planner,
- a local information management firm,
- a local planning/architecture and engineering firm,
- a local environmentalist who would provide up-to-date environmental data and perform a carrying capacity study of the Dead Sea area (number of visitors who can use the site comfortably without alteration, erosion or destruction of the site, the local community, or the visitor experience),
- a local sociologist who would conduct community interviews/surveys and jointly hold stakeholder meetings to determine interests and capabilities for sustainable tourism, sustainable agriculture, and other forms of industry,
- a local economist who would analyze the market realities of proposed land uses including tourism development areas and provision of infrastructure/services and water pricing, and
- a local transportation engineer who would review the land use plans to determine whether or not projected tourism routes are workable.

(The latter four consultants could be hired independently or subcontracted to the local information management firm.)

As a way to save fee, Options C and D would differ in the following ways. Option C would exclude a Pilot Project, architectural and landscape architectural design criteria for new developments, and policy recommendations for coordinated land use planning (including signage and clear institutional project management amongst the major players to prevent overlapping and confusing government controls). These tasks are recommended but are not critical to the formulation of a Comprehensive Land Use Plan. Option D would include all of the above.

The general planning methodology remains the same under all of the options. The team would divide the Jordan Valley into three zones or study areas. The zonal boundaries might be drawn as follows:

- Zone 1: Yarmouk River to the Baptism Site,
- Zone 2: the Dead Sea Area,
- Zone 3: the Southern Ghors and Wadi Araba.

After cross-referencing existing geographic information system (GIS) data from the Jordan Valley Authority/Ministry of Water, the consultants would work with the clients or steering committee to establish land use criteria to be used in the creation of land use recommendations. The land use criteria would act as a tool for arriving at a proposed land use map. For example, one of JVA's goals is to conserve water. Therefore, a banana field might be proposed for either sustainable agriculture or a non-agricultural land use. If an objective is to create employment, then the benefits of different forms of industry would be analyzed. However, if an area currently planned industrial is adjacent to an important tourism/archaeological site, then that land might be proposed as a conservation zone.

The land use and tourism planner, information specialists and architects and engineers, with input from the economist, environmentalist, sociologist, and transportation engineer would complete a series of preliminary overlay maps ("bubble diagrams" or less detailed drawings that allow for discussion of the constraints and opportunities of various land uses). These would be discussed with the client/steering committee and stakeholders.

Results: The results would be A.0 (A-Zero) overlay maps (15 maps or five per each zone under Options A and B and 18 maps or 6 per each zone under Options C and D to include parcel ownership information). The 15 overlays would show existing infrastructure, land uses, conservation areas, and facilities that have environmental or economic value and need to be protected. All of the options would illustrate preliminary and final land use recommendations, i.e., the Comprehensive Land Use Maps.

Under Options C and D, three additional overlays (one per zone) would illustrate existing ownership patterns and proposed land ownership recommendations, i.e., it would illustrate areas, currently under JVA's ownership, that could be privatized. All of the maps would be digitized by the Jordan Valley Authority's GIS staff.

The overlay maps and associated categories and descriptions are as follows:

Map	Overlay Category	Description
1	Infrastructure	Illustrate existing access roadways, pedestrian trails/walkways including agricultural areas, water - dams, wells, irrigation, general right-of-way for the Red Sea to Dead Sea canal or pipeline and a natural gas right-of-way, sewer and wastewater, electrical and telecommunications lines, refuse collection routes and recycling.
2	Facilities – Industry, Residential, Community	Existing aquaculture, agro-processing, and mineral or other plants, to include an understanding of plans for Aqaba/ASEZ and Irbid/Gateway Industrial Estate that will impact traffic on the Dead Sea Road. residential, community facilities.
3	Conservation	Open spaces and protected areas including environmental/nature sites, buffer zones, key ecosystems including wetlands, bird areas and migratory patterns, Bedouin grazing areas, and archaeological/cultural heritage sites.
4	Tourism zones	Tourism facilities that are existing, planned, or under construction including hotels, restaurants, visitors centers, sports, spa/health, nature hikes and rock climbing, and tourism routes – Spice, Religious Pilgrimage, etc.
5	Parcel Ownership	Lands owned and controlled by JVA and land owned by the private sector – illustrate which should be retained and which should be released by JVA.
6	Land Use Map	Appropriate future land uses (taking into account economic and environmental value, demand for private sector investment, and tourism linkages).

Other Results - In addition to the overlays, under all options the Team Leader/Land Use and Tourism Planner would write a comprehensive report of the team's findings. Under Option D, the Team Leader would create policy recommendations, including design standards and signage regulations, and also a sustainable fish farming pilot project. The pilot project would tie into Jordan Valley market realities, water and energy conservation, and agro-tourism. Sometimes it is hard for stakeholders to imagine change for a more sustainable future, as they have to be worried about more immediate economic concerns such as feeding their families. Using USAID world-wide project research and existing East and West Bank of the Jordan Valley fish farming data, the goal would be to involve stakeholders in creating the framework for a simple, implementable project, to give local farmers a clear idea of "backyard sustainability."

Summary of Options:
Option A – $55,000 – Land Use Study, not a Comprehensive Plan, with local rather than international project management; land use recommendations would be based on existing limited or non-existent data (without environmental, economic, sociological, transportation analyses) and there would be a very limited tourism analysis
Results: 15 overlay land use maps (paper and GIS), abbreviated report.

Option B – $70,000 – Land Use Study; same as Option A except more thorough tourism analysis and international project management.
Results: 15 overlay land use maps (paper and GIS), full report.

Option C – $104,000 – Comprehensive Land Use Plan with stakeholder involvement (community and NGO), tourism linkages, environmental analysis and carrying capacity study, market feasibility, transportation analysis.
Results: 18 overlay maps (paper and GIS) based on current, detailed information, full report.

Option D - $122,000 – Comprehensive Land Use Plan with stakeholder involvement (community and NGO), tourism linkages, environmental analysis and carrying capacity study, market feasibility. Difference with Option C - Option D includes a framework for a sustainable fish farming pilot project, design guidelines including architectural and signage, policy recommendations for successful implementation, all of which are important but none of which are critical to a comprehensive plan.
Results: 18 overlay maps (paper and GIS), full report.

If Option A or B is chosen, a Comprehensive Land Use Plan should be completed in the future. Site management plans should be developed for tourism zones, and specific investment projects should be carefully evaluated within the context of a Comprehensive Land Use Plan through community involvement and detailed feasibility studies.

1. Introduction

The Jordan (Rift) Valley lies on the East Bank of the Jordan River. JVA provided a map of the study area boundaries, which extend from the River Yarmouk in the north (adjacent to Lake Tiberias or the Sea of Galilee) at 200 meters in elevation to the Dead Sea at –414 meters below sea level, and continuing south to Qatar village in Wadi Araba, just north of Aqaba. The boundaries of JVA's authority extend east to 300 meters above sea level north of the northern tip of the Dead Sea and 500 meters above sea level south of the northern tip of the Dead Sea.

Under their contract with the Ministry of Water and Irrigation, the JVA controls a significant amount of land, most of which is now being used for irrigated agriculture. Under their mandate, JVA is responsible for studying, developing, and maintaining the valley's water resources including dams, irrigation, distribution networks (pumping stations, private wells, and hydroelectric projects), dispute resolution regarding water usage, soil surveys, agricultural activities, and land use planning and zoning including building codes (outside the municipal boundaries of towns and villages). It is also responsible for the design and construction of roads, and tourism development including construction of facilities, and industrial development to an altitude of 300 meters.

However, the Jordan Valley and JVA'S authority is evolving. In 2004, it is anticipated that JVA will experience a shift in responsibilities with less government control and more privatization of the Jordan Valley. JVA will have to decide which land will remain under its management and jurisdiction, and which land will go back to the Treasury or other government agencies or leased/sold to the private sector.

JVA's new Strategic Plan lists the following objectives: (i) to develop a comprehensive land use plan, (ii) to increase private sector investment in developing land, (iii) to regulate and manage land, and (iv) to protect and ensure the sustainable use of land. Plan text that is particularly applicable is *Goal Three: Land Development and Management – Develop, manage, regulate and protect land and related resources in the Jordan Valley in order to maximize their economic use, while taking into account both environmental and commercial consideration, and involve the private sector where possible.*

As a recent World Bank study (Harza, 1994) identified, there is a strong potential for both conservation and development in the Jordan Valley, as the Dead Sea and Jordan River are important ecosystems. The Jordan Valley, is part of the larger Great Rift Valley (4830 km long), which begins in Syria and snakes through Jordan along the Dead Sea, Wadi Araba, the Aqaba Gulf, the Red Sea and on through Africa to Mozambique. Its fault line marks the boundary between the Arabian and African plates. The Great Rift Valley is an important ecological corridor and migratory bridge for millions of birds that annually fly between African and northern Europe. However, habitat degradation and species loss is accelerating due to urban and industrial development pressure and inappropriate agricultural practices.

JVA anticipates that the Jordan Valley will remain as the primary agricultural production area for the Kingdom. However, other land is developable for new forms of agriculture, commercial, industrial (salt, brine, and potash), and perhaps residential uses.

A strong development attribute is sustainable tourism, defined by the World Tourism Organization as ecologically, socially, and economically successful tourism. The Valley holds tremendous nature based tourism potential. It is also rich in religious based tourism sites, both regionally and locally for all three monotheistic religions: Islam, Christianity, and Judaism. In addition to religious pilgrimage sites, the Jordan Valley offers unique health and spa tourism; heritage tourism including ancient trade and spice routes and archaeological sites; nature sites with impressive topography, geology and wadis; and shoreline and beaches with year-round sunlight for winter warmth. The sites' historic, religious, and natural significance should be tied through land use planning to tourism circuits, to facilitate tourism growth.

Proper and sustainable tourism development, that protects the resource base, could increase the length of visitor stays in Jordan and promote local business growth and employment. However, serious constraints to all types of future development include limited water (and problems resulting from extraction and pollution), a fragile environment, and insufficient community participation and training programs. A successful land use plan will balance the interests of protection and visitation. Appropriate land uses should facilitate water resource management through "smart growth." Land use maps should reflect protection of important local water sources, such as the Ghor Safi aquifer, wadis, rivers, streams, dams, wells, and water lines. This will enable an understanding of current agricultural and habitation patterns and the opportunities for other land uses.

Preservation of open space through clustered development patterns and conservation of archaeological and other cultural heritage sites are key to the success of long-term tourism attractions, and unplanned tourism development is a threat to long-term tourism success. Jordan Valley land could generate revenue for JVA through lease and later sale to the private sector. Proper development should benefit local communities through the generation of training, jobs (tourism promotes small scale or micro-enterprises and gender equality), community infrastructure, and participation in the development process.

2 Baseline Information on The Jordan Valley

Over the past fifty years, the Jordan Valley has experienced significant land use changes due to population increases and urbanization, an influx of Palestinian refugees, settling of nomadic Bedouin, and increased agricultural use of the land and sharecropper needs. Although some planning has been done on the Dead Sea area, there is no Dead Sea site management plan and comprehensive master plan for the entire Jordan Valley that would coordinate and control tourism development, industrial expansion, infrastructure construction, and other forms of development that could support and threaten the area.

Lack of water is Jordan's most critical long-term development constraint. Jordan ranks among the top ten "water poor" countries in the world. According to "Jordan Vision 20/20," per capita water available is one-fortieth that of the U.S. Thus, water sustainability is a critical issue to regional planning in the Jordan Valley, including the protection of fresh and brackish water from pollution and over-use of supply.

When preparing any type of master plan, it is important to establish existing baseline conditions. During this consultancy, baseline data was gathered on the environment (vegetation, wildlife, habitat, scenic landscapes, soils, and geology), industry and commerce, infrastructure (sewer, water, roads, electrical and telecom lines), urban development (existing land uses, zoning, communities, etc.), and tourism sites (cultural heritage including archaeological, historical, and nature based). Working in the field with maps provided by JVA staff, the Consultant conducted a photo survey (digital and 35 mm) from Umm Qais in the north to Fifa in the south, to be utilized in the next phase of the project. The following information has been culled from dozens of sources, and would be used in the next planning phase, allowing the team to "hit the ground running."

2.1 The Dead Sea

As was discussed during the Fall of 2002 at the Earth Summit in Johannesburg, South Africa, the primary environmental issue impacting market viability in the Jordan Valley is the health of the Dead Sea, the lowest and saltiest body of water on the Earth's surface, where mean annual rainfall is 100 mm+. Located in a major fault zone of the Great Rift Valley, the Dead Sea, thought to be as much as five million years old, is an incredibly unique environmental asset: remote, rocky, arid, and justifiably famous for its ancient trade routes and religious significance. The northern and southern tips of the Dead Sea have semi-tropical marshland, mudflats, and wetlands. The west and northwest part is dry desert. The Lisan Peninsula on the eastern shore, where the Roman army possible crossed to Masada, holds unique geomorphologic chalk formations, and is the only location in Jordan where Rueppell's Fox has been seen.

The Dead Sea Basin includes approximately 400 to 450 species of plants, such as tamarix, tetragyna, phragmites australis, arundo donax, and typha autralis. Tropical African trees are also found, such as salvadora persica and moringa peregrine. Fauna includes 25 species of amphibians and reptiles (including water snake and tree frog), and 24 species of mammals such as ibex, fox, wild pig, leopard (endangered), hyena, bats, wolfs, mongoose, and six

species of fish. Most of this animal life is found east of the Dead Sea in the Mujib Nature Reserve, a lush oasis set amidst spectacular geological formations, rugged limestone and sandstone landscapes cut by wadis.

The Basin is part of an important bird migratory route, and Bird Life International has identified more than 90 bird species in the Mujib and Dead Sea area, including storks, herons, egrets, eagles, and kingfishers, and the endangered Lesser Kestrel and Griffin Vulture. Bird-watching is an economic force in tourism that continues to grow, and conserving birds not only indicates the health of our environment but also offers economic benefits.

The Dead Sea is the lowest point on earth – 414 metres or 1476 feet below sea level. It is nearly lifeless, with only algae and bacteria surviving its salty waters. Unfortunately, the Dead Sea's water level has dropped more than 80 metres or 262 feet in the past 50 years, and is continuing to drop about one meter (three feet) per year. The entire southern basis is now dry and has been transformed into an industrial area, dramatically reducing the length of the Dead Sea shoreline, from 75 km long to 50 km long and 17 km wide.

Reasons for the loss of Dead Sea water include: 1) evaporation through extraction of minerals, and 2) loss of water from the Jordan and its main tributary, the River Yarmuk. For thousands of years, the fresh water of the Jordan River balanced the hydrological cycle of the Dead Sea. But since the 1960s, the Jordan River's water quality has deteriorated due to municipal and industrial sewage dumping, and the water quantity or flow has diminished.

Syria and Israel have been diverting the Jordan River for their own uses, and Jordan has been diverting it for agricultural, hydroelectric and urban use. The primary wadis that flow directly into and feed the Dead Sea are Main, Zara, Mujib, Karak, and Al-Hasa, but before some of that water reaches the Dead Sea it is diverted for agricultural use. Dangerous sinkholes resulting from underground salt dissolution are appearing along the shoreline. At this rate, it is feared that the Dead Sea will be dry by 2050.[1]

In order to save the water level of the Dead Sea, the Government of Jordan is proposing a Red Sea to Dead Sea (RSDS) canal or pipeline, 220 km long and 25 km wide, running parallel to the Wadi Araba. The RSDS would take advantage of the topography and elevation changes, i.e., seawater intake from the Gulf of Aqaba up the coastal ridge to 200 meters in elevation and then downhill through the Jordan Rift Valley and across Wadi Araba, dropping to –400 meters at the beginning of the Dead Sea. The drop in elevation would drive electrical generators to pump water from the Red Sea to the Dead Sea.

Originally, the RSDS project had two purposes: to increase the level of water in the Dead Sea and boost the shoreline which is critically important to existing and proposed tourism

[1] Because the Dead Sea is a single ecosystem regardless of political boundaries, Friends of the Earth Middle East has been spearheading efforts to create a regional management plan (including Israel and Palestine) for the Dead Sea Basin in the context of a Biosphere Reserve and World Heritage status under UNESCO. Surely as the primary catalyst for investment and development in the Jordan Valley, preservation of the Dead Sea and its surroundings is critical to a sustainable tourism industry.

development and migratory bird patterns; and to generate hydroelectric power for municipal and industrial uses. Water that was not desalinated for human and agricultural use would continue to the Dead Sea. Cost estimates for the pipeline alone run from $800 million to $2 billion, and the original canal and desalination concept could cost as much as $5 billion. The Near East Foundation and others believe that there is an opportunity for aquaculture or fish farming within the storage ponds of the canal.

An environmental assessment has not been completed, and the impacts of mixing two different bodies of salt water, seawater leaks that could endanger groundwater, impacts on sinkholes, and seismic concerns are unknown. There are also concerns about damage to the coral reefs in the Gulf of Aqaba and landscape alterations in Wadi Araba. However, because the Dead Sea is dangerously losing water, there seems to be general support from environmentalists and government policymakers in Jordan for further exploration of the costs and benefits of the Red Sea-Dead Sea Canal or pipeline project.

In 1997, the JVA commissioned Jordanian Sigma Engineers to complete a detailed master plan for the Dead Sea area, stretching from Suweimeh in the north to Ghor Haditha in the south, a total of 60 km. This report divided the Dead Sea area into primary development and investment zones, including the Suweimeh zone for which the JVA built infrastructure at a cost of JD 25 million. The work included electricity, telecommunications, storm water and sewer networks, and a 7km service road to service the shoreline hotels and activities. The majority of the land is public, although many of the parcels along the shorelines are privately owned. The Sigma study included detailed maps illustrating existing conditions (land ownership, soils, and important archaeological sites). It also included maps of projected development areas, as detailed below under Tourism Development. In addition to physical planning, the Sigma study includes investment cost estimates (JD 219 million for hotels, JD 27 million for villas/condos, and JD 16 million other investment) and recommendations for project implementation and management.

2.2 Agriculture and Water

As previously mentioned, JVA's Strategic Plan promotes economically viable and environmentally safe water resource management and efficient, transparent, and equitable water distribution and supply. Over the decades, land use decisions have greatly impacted the Jordanian economy. In order to create a sustainable land and employment base for the Jordan Valley, and because of the lack of profitability in the agricultural sector and the need for maximum water efficiency, JVA's goal is to cultivate less land for traditionally water intensive agriculture and to partially shift land use in the valley to less water intensive crops, aquaculture or fish farming, trade, residential use, and light industry including tourism.

Agricultural productivity has long been a government objective in the Jordan Valley, and production is divided into four major types: field crops (wheat), vegetables (including field fruit), plantation crops (including fruit trees and olive orchards), and livestock (500,000 sheep, 170,000 goats, 12,000 cows, 16,000 other animals including camels). Cattle and poultry are few as they experience heat stress in the Jordan Valley.
Worthy sector goals included creation of employment (21,000 jobs), increased income for improved quality of life, urban development and infrastructure, and production of affordable

and nutritious food for local and some export (especially Gulf States and European) consumption. Interviewees said that two-thirds of the Jordan Valley's fruit and vegetable production is for local consumption. Agriculture has stimulated local industry (drip irrigation equipment, plastic sheeting, seedlings, pesticides, and fertilizers), and it has stimulated ancillary services such as transport, commerce, health, education, and sanitation.

In addition to JVA, five other groups are responsible for the agriculture sector. They include the Ministry of Agriculture (pest management programs), the University of Jordan/College of Agriculture, the Jordan Valley Farmers Association (membership group), the Agricultural Council (15 members who create strategies and policies), the Agricultural Credit Corporation (subsidized loans), and the Agricultural Marketing and Processing Company (export marketing and two processing plants). Although marketing has been a key concern of international donors in the Jordan Valley since the 1970s, the Consultant was informed that the Agricultural Marketing Association recently closed.

The Jordan Valley is a sensitive ecosystem, and there is a downside to increased land availability for traditional agriculture. Potential environmental impacts include loss of natural habitat, contamination of aquifers due to pesticides and nitrates, contamination of ground and surface water, visual blight and odor, litter of pesticide containers (left in fields and roads), and overgrazing and erosion. Currently one-fifth of industrial output in Jordan is concentrated in food production, but the sector has lost profitability. Financial viability of agriculture is dependent on good yields, good prices, low production costs, farm overhead costs, taxes and subsidies. For a variety of reasons, including water supply and quality, scheduling of supply and demand, land quality, pest control (white fly and Mediterranean fruit fly particularly), saturation of local markets, seasonal production, insufficient marketing, limited export opportunities, insufficient training and management, and credit/debt issues, traditional agriculture is difficult in the Jordan Valley.

Some popular crops are too water intensive, such as citrus, bananas, and tomatoes, although there is demand in the local and export economy. Although tomatoes are the largest export, with 90 percent going to the Gulf States and Lebanon, one of the interviewees said that the tomato paste processing plant, which is owned by the Government of Jordan, typically receives ten times more tomatoes than it can process. It became less expensive to discard the tomatoes than to harvest them. There is also a problem with peak irrigation needs. Unfortunately, prices for water consuming citrus and banana crops are much higher and more stable than for most vegetables, and so Jordan is in essence exporting water through crop exports.

The government is encouraging more environmentally and market friendly agriculture, using less irrigation, recycled wastewater or brackish water, and organic methods of farming (non-chemical pesticides). Since the 1950s, there has been a ten-fold increase in irrigated areas of the Jordan Valley. In 1980, agriculture in Jordan consumed 78 percent of all water resources. Although there is a minimal visual impact on the landscape due to plastic greenhouses and drip irrigation lines, water efficiency is very low. Today it is estimated that there are approximately 20,000 individuals involved in farming in the Jordan Valley. The government

hopes to improve water efficiency and reduce agricultural use of water resources to 55 percent by the year 2010, to balance it with other uses.

In balancing agriculture, there is an opportunity for Jordan to continue to produce food and sustain its needs, but in a "smarter" way. Sustainable agriculture, such as organic farming, can contribute to the long-term protection of natural resources. Farming organically means that soil and water resources used directly in the production of food are not depleted of the naturally occurring elements needed for long-term food production.

Planting of "new" crops, native or water-conserving which the local ecosystem is best suited to nurture, would require public awareness in production and marketing. According to recent studies, more suitable crops might include cotton, maize, green fodders, mangoes, avocadoes, dates, early seedless grapes, and cut flowers/grasses. Although it is too hot in many parts of the Jordan Valley for olive groves, it is an ideal environment for olive crushing and processing mills, and this could be tied to agro-tourism (e.g., November Olive Festival). Increased use of the Awassi sheep might improve export potential. It is interesting to note that during the Hellenistic period, palm horticulture and cultivation of spices was popular in the Jordan Valley.

Other environmental policy issues to create long-term sustainability of water resources include controlled extraction of groundwater (which deteriorates as the Dead Sea shoreline recedes and create dangerous sink holes resulting in evacuations and control of Bay), prohibited discharge of untreated effluent into a water source (including pollution from Zarqa industries that reach the Jordan Valley through the King Talal Dam), and recycling of biodegradable solid waste and disposal of non-biodegradable waste at environmentally acceptable locations.

There have been a couple of recent policy issues that will impact future agricultural use of the land. Farmers now pump 150,000 cubic meters of water free-of-charge from local wells, which discourages water conservation. Therefore, the Ministry of Water imposed a fee (25 fils per cubic metre/60 fils for quantities exceeding 200,000) on the use of groundwater wells, to protect the resource and promote conservation. Officials anticipate that the policy will save between 50-60 million cubic meters of water annually. There are 3000 wells in the country, and 1200-1300 are used for irrigation; 600 are unlicensed.

Another recent policy passed by the Jordanian government was a decision to include the agricultural labor sector under the social security umbrella. The policy will benefit thousands of agricultural workers and should attract many unemployed Jordanians to jobs on farms.

In terms of land use planning, the team would look at the critical need for water resource management and conservation in terms of land use, policy (increase use of marginal rather than fresh water, reduce demand through pricing and effective water supply and distribution), and balancing "smart" agriculture (less water intensive, organic crops that also protect water quality) for both local and tourist consumption and export markets. Policy issues such as free movement of crops across borders could also be analyzed.

The team would work with JVA to identify on land use overlays any of the following existing or proposed water-related resources and infrastructure that fall within JVA's authority in the Jordan Valley:

- Wadi Arab pump station (new),
- Kafrein Dam (existing),
- Feedan Dam (new),
- Ibn Hammad Dam (new),
- Adasiyyeh/KAC storage pond (new),
- Kufranja Dam (north of Amman – new),
- Rayyan Dam (northwest of Amman – new),
- Hisban Dam (new),
- Wuheida Dam (new),
- Qa'a Dam (new),
- Meddein Dam (new),
- Wala Dam and Mujib Dam and Basin,
- Hawarat Weir (Zarqa River),
- Wehdeh Dam (new),
- Karameh Dam,
- S. Ghors Irrigation Project (rehab),
- Hisban Kafrein Project (rehab),
- Middle Ghors and Zarqa Triangle (rehab),
- Pump Station to Wadi Arab (new),
- North Conversion Irrigation Project (rehab),
- Damieh (rehab),
- Zmailieh Pump Station (rehab NE Ghors),
- Ziglab Pump Station (new).

2.3 Aquaculture and Mariculture

Aquaculture or raising fish in fresh water, specifically tilapia and carp, seems to have expanded potential in Jordan. The climate is excellent. There are four sources of water for aquaculture: fresh such as that found in the King Abdullah Canal (although there is debate as to whether fresh water quality can be maintained with fish in it), dams, brackish or drainage water, and desal outlets. On the other side of the Jordan Valley, Israel produces 15,000 tons per year of aquacultural fish and 1200 tons of maricultural fish. Jordanian farms could be very profitable and provide a sustainable food source for local people. Mariculture or raising fish in salt water also has potential, albeit perhaps limited.

Although aquaculture has been discussed in Jordan for 40 years, and perhaps dates back in some limited fashion to the Roman Period, the industry has been impeded by a lack of infrastructure, skilled facility design, trained management and on-site management (such as at the King Abdullah Canal which already holds fish that are unmanaged), immediate availability of parts, and operational staff. There has also been a lack of institutional support. Current governmental responsibilities lie with the Ministry of Agriculture, Department of

Animal Wealth. The universities offer no specific aquaculture courses and there is limited research capability (only at the Aqaba Marine Science Station under the Universities of Amman and Yarmouk).

Since 1982, staff at the Near East Foundation have been involved in fish farming in the Jordan Valley. With funds from Canada, the first farm, the Arab Fish Company near Irbid in the Jordan Valley, was a $2.6 million investment. It used a simple low-tech method of farming in existing irrigation ponds. The facility was well designed, but staff ran into problems with receiving spare parts on time. In 1989, it was sold to the private sector. It is now the American Arab Fish Farm, and it produced 150 tons of fish last year.

The Jordan Valley Fish Farm which is about 8 kilometers from South Shuna was opened by the Refai family in 1997. It is using brackish water to grow fish, and is operating at a strong profit with an anticipated crop of 400 tons this year. The owners are thinking about opening another farm, although they have encountered problems with marketing, distribution, and awareness. Their fish are reaching the markets of Amman, but not other major population areas. Fish is not part of the traditional culture, although it has become quite popular with all of the returnees from the Gulf since 1991. Although the price difference between frozen fish (1.8 JD) and fresh fish (2 JD) is minimal, last year Jordan imported 7000 tons of frozen fish, and it produced 600 tons of fresh fish. The industry should be able to export fresh fish to Europe at higher prices (as Israel currently imports Jordanian fish for their local market and exports their aquaculture at higher prices to the European market).

The Near East Foundation said that there are other benefits besides provision of a stable food source. Fish can be raised in irrigation ponds, and they add natural fertilizer to the crop water. Fish farms can also be sources of agro-tourism. For example, the Jordan Valley Fish Farm has a restaurant that serves tilapia. The aquaculture industry could spur other types of industry, such as the production of aerators, feeders, and fishing nets, all of which are necessary for fish farming. Currently those products are imported from Egypt although they are relatively easy to make.

A land use plan should analyze all sources of water for aquaculture and linkages to other industries, such as tourism (i.e., the team's proposed pilot project). It should also indicate "highest and best use" of existing resources. For example, the existing salty Karama Dam might be used for fish farming. A land use study would also indicate other sites that might be used or expanded, and associated constraints including market feasibility and opportunities including local and export consumption, as well as institutional and policy constraints and management and training needs. (It would be interesting to see the successful fish farm at the Experimental Station for Aquaculture in Tiberias.)

2.4 Other Industry

The potential for increased industrial production in Jordan depends upon natural and human resources, infrastructure, institutional framework, trading patterns, and market opportunities. The potential for investment depends upon investor perceptions. One issue in the Jordan Valley is temperature and salinity. To produce such a highly controlled environment can

increase construction costs. Any new industry should minimize the demand on the Jordan Valley's ecosystem and limited water supply.

Jordan lacks natural resources, and the mineral extraction industry is an important contributor to its local economy. It was the desire for products such as bitumen, basalt, sea shells, and other minerals that stimulated trade in ancient Jordan. Mineral development dominates the Dead Sea area. Although rare today, the Dead Sea was once full of bitumen (floating asphalt), an important mineral to the ancient Roman economy. Potash, used in the manufacture of fertilizer, has been extracted from the Dead Sea since 1930 and is its most valuable mineral.

The two major industries on the Dead Sea area are the Jordan Arab Potash Company and the Israeli Dead Sea Works, which mine potash, magnesium, bromine and their derivatives. On the Jordan side, the Jordan Arab Potash Company was established in 1956, and has two plants. It is the world's fifth largest potash producer, and is an important employer of 3500-5000 people, some of whom are local employees while others commute from Arad and Karak. The company sold 1.96 million tons in 2002, worth approximately $200,000,000. India was the largest importer (521,000 tons), followed by Malaysia (157,000 tons), Indonesia, Philippines, Korea, Spain, Italy and Finland. The Israeli plant is of comparable size, and produces potash, bromine, salt, magnesium chloride, magnesium metal, and cosmetics/medicinal mud.

Environmental impacts of potash production include air pollution (dust and fuel burning emissions), disposal of hazardous materials, visual impact (split of the Dead Sea into two parts – natural northern sea and southern human-made solar evaporation ponds and the industrial skyline), and excess use of fresh water. In addition, the production of methyl bromide depletes the ozone layer that is prohibited by the Montreal Protocol. There has been talk of expansion, which would provide more jobs but could adversely impact the Dead Sea without appropriate regional environmental mitigation and monitoring measures. Jordan Arab Potash Company holds a long-term land concession agreement with the Jordanian government, but it is slated to be privatized. Currently, the Jordan government owns 52 percent, and other major shareholders include Iraq and Kuwait.

Another small industry along the Dead Sea is the Safi Salt Company. Salt is the by-product of potash production, and Safi Salt does a good job of minimizing potash waste. One of its export markets is the US, where salt is used on snow-covered roads. Another important product of the Dead Sea is "mud cosmetics," such as those produced by Zara and Rivage, which are used locally and exported. Other products that are sourced locally in the Jordan Valley include stone, terrazzo tile, cement, pumps, tubes, pipes, textiles, leather, furniture, paper, printing, chemicals, plastic, metals, mechanical equipment, electrical equipment, and transport. Approximately $800 million worth of products are annually exported from the Jordan Valley.

One interviewee said that a permit had been requested for a terrazzo mine across from the Dead Sea, perhaps near an ancient Byzantine archaeological site and cemetery. Depending upon the size and type of mining, heavy equipment, and proximity to hot springs or other

water sources, mining can be very harmful to a fragile ecosystem. Other potential impacts on tourism include erosion, dust, noise, surface/groundwater pollution, and visual blight. Land reclamation costs are often high. In addition, land use adjacencies, such as mines next to important archaeological or other conservation sites, can be particularly harmful to an emerging tourism industry.

Industrial development was historically limited to the Ghor Assafi area, but is now appearing in other places (like the Jordan Gateways Industrial Estate at Mashare). All industrial projects and particularly those that are planned for the Jordan Valley should be in strict compliance with a land use plan. Environmental assessments should be conducted prior to approval. After construction, industrial developments should be monitored for compliance with environmental regulations. Most industry should probably be located where it is currently planned in IQZs outside the environmentally fragile Jordan Valley, as all industry includes some destruction of habitat, pollution, and land.

The Harza study indicated that a number of areas were being considered for industrial development, and the status of those sites should be included on a land use overlay map. For example, development of an oil and natural gas pipeline to provide a clean source of energy has been discussed, to run from Egypt to Israel, and its potential right-of-way and linkages to industry should be illustrated. The team would locate all of the existing industry, proposed industry, and proposed right-of-ways on land use maps, and would analyze future appropriateness for those land uses. Because of the Arab Potash Company's high position in the world market and its location on the historic Dead Sea, and Safi Salt's location, there might be some opportunity for tourism linkages to industry-related conferences and "tech tourism" through industrial product tours.

2.5 Conservation Areas - Archaeological and Nature Sites

In 1995, the Department of Antiquities did an archaeological survey of the Jordan Valley. In the Dead Sea area, the sites are keyed in pink on Soil Conservation Maps 2/6 and 2/7, but they need to be mapped on GIS and listed in a data base of cultural/natural resources. The Jordan Valley is rich in archaeology, having been a major trade and settlement route for thousands of years. Sites on the West Side of the Dead Sea which might tie in the future to Jordanian sites include Masada (King Herod's Winter Palace), and Qumran (cave where the Dead Sea scrolls were discovered by local Shepard boys).

Due to the wealth of sites, there are tremendous tourism opportunities, particularly nature-based and heritage-based including religion, in the Jordan Valley. Preservation of those sites and conservation of existing nature reserves will ensure the long-term protection of Jordan's cultural heritage and tremendously enhance the potential for tourism development. One of Jordan's most remarkable assets is its geology, from the black basalt layers of Umm al Jimal in the north, the limestone and marl of Wadi Mujib near the Dead Sea, to the banded Cambrian sandstone of Petra and Wadi Rum in the south.

During field work, the consultant identified on a base map the following Jordan Valley sites with associated field notes (locations of other sites and facilities to be verified as to whether

they are within or outside JVA's boundaries). The following inventory, listed below from north to south, includes archaeological, cultural heritage, nature, and religious sites, but it also includes water features, communities, etc. to help the consultants identify functional relationships. Sites that are within JVA's authority would be included on the overlay maps. This is not a complete inventory. It would either be expanded or decreased during land use planning, and tourism sites would be illustrated with linkages to tourism routes. Hunting areas, if they are to continue to be used, should also be illustrated:

* RSCN protected area along the Yarmouk River,
* Gadara/Umm Qais (one of ten cities of the Greco-Roman Decapolis; then Byzantine/Islamic/19th C. Ottoman),
(Recommended we visit Unity Dam north of Himma)
* Al Himma hot springs, (Zara hotel project),
(Yarmouk River diversion area private farms; Bakura small village in fields)
(N. Shuna – needs a public park; strong Main Street for markets and retail)
* Wadi Arab Dam (natural beauty/strong recreation potential),
* Arab Fish Farm (potential for expanded aquaculture and tourism linkages),
* RSCN North Ghor bird area,
* Wadi Hanas (prehistoric),
* Tabqat Fahl/Pella (archaeological site and famous battle 635 AD between the Muslim army under the Companions Khalid Ibn Al-Walid and Abu 'Ubaydah Ibn Al-Jarrah and the Byzantines)
(nearby is Mashare town and Wadi Rayyan free zone under construction and Karama town /cucumber and tomato greenhouses in landscape – 60 km to Baptism site)
* Tell El-Hayyat
* Abu Hamid
* Tell Es-Saidyeh
* Tell Mazar
* Deir Alla
* Mu'ath bin Jabal (tomb in the Ghor/important scholar and Companion sent by the Prophet to rule Yemen/one of four who compiled Qur'an during the time of the Prophet)
* Mosque and Tomb of the Venerable Companion and Guardian of the Islamic Nation Abu 'Ubaydah 'Amir bin Al-Jarrah (among the first Companions of the Prophet to enter Islam – has visitors facilities)
(Also need to locate the Shurhabil bin Husnah (tomb) and the 'Amir bin Abi Waqqas (cousin of the Prophet/tomb)
* Tomb of the Venerable Companion Dirar bin Al-Azwar (early Companion and warrier/tomb off the road)
(Need for café in this area to serve religious pilgrimage route.)
(Town of Deir Alla – good vegetable markets and medians small palms; Muadi tomato paste factory; beautiful but water intensive banana fields; Arda with women's coop is nearby)
* Et Twal (Bronze),
* Karameh Dam (salty water and seismic zone not good for manufacturing; potential fish farming site; very hot and isolated flat treeless landscape for tourism),
(Karameh town and S. Shuna nearby – nice street plantings of palms)
* Prophet Bin Noon site,
* Teleilat Ghassul
* Baptism site (Jordan River/The Bethany/Saphsaphas and Wadi Kharrar conservation zone with clustered tourism walking routes and visitor facilities),
* RSCN Maghtus protected area,

* tourism linkages to nearby Mt. Nebo/Siyagha) and Madaba (Byzantine Church of the Map, Chapel of St. Theodorus and Church of the Apostles and Ottoman settlement),
* Ma'in Hot Springs (Hammamat Ma'in known to pilgrims as the city of Livias and Baths of Moses),
* tourism link to Mukawir,
* Zara (Roman port on the Dead Sea),
* Lisan Peninsula (only location in Jordan of Rueppell's Fox; sinkhole problem)
* Mujib Nature Reserve (and RSCN visitors centre/under construction),
* Al-Madash Range Land Reserve (need to locate/where the Mujeb River flows to the Dead Sea; touristed; maintained by the Forestry Department; famous for Tammarix and wetland)
* Bab Edh-Dhra (Bronze Age site east of the Lisan Peninsula)
* Numeira
* Deir Al Qatar
* Mazr'a (Byzantine),
* Lot's Cave near Zoar/Ghor Al-Safi (Neolithic, later Bronze Age cave with Byzantine church and monastery mosaics abandoned in the 9th C. AD – holy place for both Christianity and Islam),
* Khirbet Issa (early Bronze cemetery, Nabataean, Roman, Byzantine, Islamic sugar mills)
* Feifa (Islamic inside and Early Bronze cemetery)
* Safi/Wadi Fifa (RSCN protected palm community and Neot Hakikar marshland/wetland area for birds)
* Khirbet El-Tannur
* El Mumrah (Bronze Age cemetery),
* Wadi Dahal (Nabataean water reservoir),
* Khirbet Kharanas (Edomite/Iron – copper smelting),
* Buseirah
* Khirbet Fidan – linkages to Dana and Khirbet Finan (ancient copper mining and smelting center dating back to 4500 BC) and Nabataean water systems/gardens
* Wadi Ibin Hammad – bird area,
* Beir Madhkur (well, was no caravanserai route from Petra – linkages to Petra),
* Barqa
* Gharandal (Nabataean, Roman, Byzantine site),
* Wadi Araba (Paleolithic Period Homo Erectus passed through from Africa)
* Tell El-Kheleifeh

2.6 Socio-Economic Issues

As the "Jordan 2020 Plan" stated, physical attributes, climate, location, and the availability of raw materials are important, but social factors are the key to economic success. Particularly, housing, health, education, and training or the willingness to innovate are critical to real competitiveness. The ability to market and export is tied to financial success. Therefore, understanding human resource development and socioeconomic constraints and opportunities is important to successful regional planning in the Jordan Valley. The consultant strongly recommends a socio-economic survey and community meetings in concert with detailed land use plans, to identify local needs and relationships to tourism and other forms of development in the Jordan Valley. The most current available socio-economic data was from a 1970s study, although it is our understanding that JVA had a socio-economic survey completed in 1997. That information would be very helpful to future land use planning. Population growth in Jordan remains quite high. In 1973, North Shuna was the largest settlement in the Jordan Valley with 7662 people. The current population is unknown,

although it is presumably much higher. There were approximately 64,000 people living in the Jordan Valley's northern region, from the Yarmouk River to the Dead Sea. To the south, the Jordan Valley includes the Southern Ghors and the Wadi Araba, a total of about 33,000 residents.

Village and municipal councils rule. Each tribe is represented by two people (including mukhtars or mayors). The Southern Ghors region includes 20 indigenous tribes. The Hamaydi tribe inhabits the area around Wadi Mujib. Major settlements include Mazra'a, Haditha, Dhira'a, Safi (contact the Director of Safi District, Governate of Karak) and Fidan. The economy is primarily agricultural (11,504 people in 1970s now much larger presume/549 agricultural holdings/34,832 dunums). Two-thirds of crop production was in irrigated crops, including tomatoes, eggplant, sweet peppers, beans, and cucumbers.

Wadi Araba was primarily Bedouin, including the Sa'idiyyin and 'Amarin tribes, with an agricultural and herding economy. Priorities were education and housing, with housing for teachers being a major issue. Major settlements include Gharandal, Rahma, Bir Madkour, and Gureiga. Fulfillment of local basic needs such as food/nutrition, housing, clothing, health, water, sanitation, education, jobs and economic opportunities, and participation in decision-making is all tied to tourism sustainability. A percentage of local people need to be trained in services and other jobs.

The history of the Jordan Valley's land use patterns follows the trail of changing local and donor priorities:
1930s – grazing and subsistence economy – livestock, wheat, and barley,
1940s – cash economy; road built from Amman to S. Shuna to Jerusalem and from Irbid to N. Shuna to Haifa,
1950s – information not available,
1960s – top priority was to stop malaria in the Jordan Valley, which was successful,
1967 war 60 percent of JV homes were destroyed; most were made of mud adobe,
1970s – Following the 1967 Arab Israeli war, the 1970s became the decade of urbanization and settlement of Bedouin tribes. In 1977, the government decreed that JVA would have full responsibility for the Jordan Valley.
(see 1973 PADCO maps 22,23, 112, 161) A dramatic transformation ensued. The goal was to urbanize and incorporate villages (Muaddi, Durar, Waggas, Kafrein, Wadi Al Yabis, Arda, and Ardaslya; larger Karama, N. Shuna, S. Shuna, Mashare, Deir Alla, Kreimeh) and to increase agricultural production and quality of life.

As previously noted, the consultant recommends that the land use analysis be a participatory process and include stakeholder and community meetings. If that is not possible, the consultant recommends a phase two that would include social surveys of local communities, including stakeholder meetings/workshops and income generation analysis to discover interests and capabilities for sustainable tourism and other forms of industry, including sustainable agricultural practices.

3 Tourism Development

3.1 Importance of Tourism

Tourism is obviously a key economic driver in Jordan, and proper land use planning is essential to encouraging a sustainable brand of tourism. Jordan offers the world a very proud heritage, and such extraordinary cultural riches will be in high demand when peace returns to the region. The tourism market has diversified, and it is now an all-purpose destination. Currently, both investors and visitors are deterred by the political instability of Jordan's neighbors. However, in normally peaceful times, after worker remittances, tourism is the second largest foreign currency contributor to Jordan's balance of payments. In countries like Jordan with few natural resources, history, culture, nature and other scenic assets can provide strong development impacts.

Tourism is labor-intensive, and it creates jobs faster than any other industry. In addition to revenue to the public sector, tourism produces a multiplier effect in the private sector through the growth of other industries, such as transport, agriculture and food production, handicrafts, financial services, and construction. It can increase park land and recreation for visitors including local tourism which is particularly important during periods of regional instability, and increased markets for Jordan Valley products including fresh fruit and vegetables. In addition, successful tourism can erase international biases and link cultures

But the benefits of tourism are conflicting. Tourism poses a major demand on the environment and it makes business sense to be conservation conscious. In Jordan, successful implementation of the sector depends upon preservation of the Jordan Valley's unique attributes, including the Dead Sea. "Tourism sprawl" patterns are a threat along newly constructed roads. The availability of useable water is a major issue. "Green" hotel management programs are being encouraged world-wide, as tourists normally consume much more water than locals. Switching from hot to warm or cold water laundry can save 50% on water and energy costs. Installing energy and water efficient appliances can produce additional savings. Fixing leaking toilets and dripping sinks can reduce water loss, as can irrigation of hotel landscapes with "grey water."

In terms of society, tourism can create cultural conflicts and changes to traditional lifestyle. It can either preserve or revive cultural heritage through positive interaction with local communities, or it can break down traditional family behavior patterns.[2]

3.2 Tourism Challenges and Sub-sector Opportunities

In a limited way, development of the Dead Sea shoreline began about 40 years ago with hikers in search of natural beauty and cultural heritage, and with health spa users. Since

[2] Tourism is like a fire. You can cook your meal with it, or it can burn your house down." Old Asian Proverb

automobiles became common, Amman residents have been traveling to the Dead Sea on weekends for picnics along the shoreline, and the Rest House and Dead Sea Spa hotel have been operating for a number of years. However, with those limited developments, the shoreline is still quite pristine.

The Government of Jordan has targeted the Dead Sea as one of the primary centers for tourism in the country, recognizing its strong growth potential. JVA has spent $20 million on building infrastructure along the Dead Sea, including roads and service lines for the existing and proposed development, particularly in Sweimeh. The Dead Sea offers a diverse tourism base. It includes *health and wellness tourism*, the Dead Sea being famous for its consistent solar radiation, medicinal qualities, mud, and hot springs. Health/wellness tourism is growing all over the world. In the past couple of years large luxurious health spa hotels have opened on the Dead Sea shoreline, including the Dead Sea Movenpick and the Dead Sea Marriott. Inland but not too far away is the Mercure Ma'in Spa, a renovated facility located on the Ma'in hot springs. In addition to spa tourism, Dead Sea health facilities can cater to travelers' emergency needs resulting from nature-based and adventure tourism, and to conference tourism or medical research holidays marketed to the international medical community.

Other types of tourism include *cultural heritage* (historical and archaeological sites) and *religious-based* tourism. Culture is the lifeblood of tourism. A steadily growing market, cultural heritage tourism is comprised of people, particularly Europeans, who travel thousands of miles to explore other cultures, the built heritage as well as the living environment. The northern part of the Jordan Valley includes the Decapolis cities of Umm Qais and Pella, and these are typically day trip site visits from Amman. There is opportunity to improve the educational exhibits at Umm Qais, and to adaptively reuse part of the Ottoman fabric as a museum, perhaps as an exhibition area or as a thematic interactive cultural heritage facility displaying exhibits representational of the entire Jordan Valley (e.g., Cultural Treasurers of the Jordan Valley).

A museum of costumes and jewelry drawn from tribes across Jordan could be small but interesting to local and foreign tourists, and it could act as a catalyst for tourism development in a town like North Shuna or Fifa. Along the Dead Sea, there is opportunity to construct a museum on the World of Salt, a topic that has received a great deal of international research recently. High quality museum shops with site and national identity typically produce much more revenue than admissions fees, and this continues to be a lost opportunity in Jordan.

Jordan has a wealth of religious and pilgrimage tourism sites. Over the past five or so years, the Ministry of Tourism and Department of Antiquities have been excavating, preserving, and promoting the Bethany or Baptism Site of Christ just north of the Dead Sea, 55 km from Amman. The Ministry has created both a protected area (6000 dunums) and a much visited holy site, with a visitors center, shops, restaurants, areas for religious festivals, and a hiking trail, as well as parking, electricity, water and sewage pipelines. The scale and design of the facilities, from the beduoin tents to the stone and thatch roofed buildings, is much more appropriate and interesting than the overwhelming, modern facility on the West Bank of the Jordan.

Tour operators now do religious circuits, both Christian and Islamic, that include walking in the footsteps of Abraham (Ibrahim), Mt. Nebo (Moses or Prophet Musa), Madaba (Church of the Map), Mukawir (John the Baptist or Prophet Yahya), and Bethany (Jesus or Prophet 'Isa). Some include the extraordinary mosaics of Um Al-Rasas (awaiting a better shelter) to the east of the Dead Sea and Lot or Lut's Cave (Ibrahim's nephew) at Ghor Safi south of the Dead Sea en route to Karak. North of the Dead Sea are the mosques and shrines of Prophet Mohammed's companions, which were visited by 1300 tourists in January 2003. Most of them were Shi'ite Muslims. The religious pilgrims' route includes many layers of archaeology from the Biblical Moabites and Edomites to the Arab Nabataeans, Romans, Byzantines, and Islamic periods.

There is an increasing interest in and tremendous potential for *nature based or eco- and agro-tourism* in the Jordan Valley. Wadi Mujib near the Dead Sea is already a protected nature reserve managed by the Royal Society for the Conservation of Nature (RSCN), and they are building a visitors center opposite the Dead Sea near the Mujib Dam and Bridge. RSCN also intends to build a camping area. The geology of the wadis offers unique hiking, rock climbing, biking, photo and desert safaris, and other forms of eco-tourism.

Bird watching is a growing international sport, and the Jordan Valley is one of the most important bird ecosystems in the world. Protected areas and important nature sites of the Jordan Valley under JVA include the Yarmouk River, the Jordan River, the Dead Sea, Mujib Reserve, and the Rift Valley in general (an important migratory route for birds). Future land use overlays should include all protected areas, both within and adjacent to JVA's authority for nature based tourism linkages (Rum Dana, Mujib, Fifa, Lissan, Ajloun, Shoumari, Azraq, Dibeen, River Yarmouk, Jordan River, Burqa).

Within nature based tourism, there are always opportunities for private investment. Examples of successful desert nature parks around the world include geological and plant interpretive centers with a springtime desert bloom festival, water conservation research centers, cafes and tea rooms, interpretive displays on ecology and horticultural walks to promote environmental stewardship and Xeric or water conservation education (important to family tourism), and escorted bird walks with expert naturalists. JVA has plans for a boat dock, and this could include sailing, paddle boats, and small dinner cruises. For nature based travelers, controlled low impact camp sites offer affordable and clean lodging and food, leaving the complex topography pristine (without roads). There is opportunity for animal photo safaris (ibex, panthers, owl, fox, wild pigs, etc.).

To increase recreational tourism and private sector investment, the Harza Study recommended a tourism school at the Dead Sea. Another idea might be a Low Altitude Training Center, similar to the Kip Keino High Altitude Training Centre in Eldoret, Kenya, also part of the Great Rift Valley. The training center is included on photo safari tourism circuits and brings in athletes from around the world. This could also be a center for nature guide and rescue training, which will become increasingly important with nature based tourism.

Another type of recreational tourism that has been mentioned is golf. Sand golf courses are more environmentally friendly than grass greens, but both are water intensive. Australia seems to be leading the world in "green management" of golf courses, including water management (only grey watering), pesticide use, and other local environmental issues.

3.3 Hotel Infrastructure and Parcel-by-Parcel Land Use

A land use plan is an important first step in clarifying the rules for tourism development, and helping policymakers and investors make better long-term decisions. In tourism zones, hotel development and related facilities are always a major opportunity. Although currently there are an insufficient number of hotel rooms at the Dead Sea, no one has done either a carrying capacity study or a market study to understand the real conditions for successful tourism development.

On the West Bank (prior to the Intifada), Palestinians and Israelis were planning to increase the number of hotel rooms from 2300 (70 percent occupancy rate) to 41,500 by the year 2020. Nearby Massada, the most highly visited site in Israel, received 650,000 visits annually, the 'Ein Gedi nature reserve received about 500,000 annual visitors, and Hirbet Qumran (Dead Sea Scrolls) received 300,000 annual visitors. However, they encountered environmental problems. Recently a solution was derived, and the industrial salt pans of the Dead Sea Works potash factory were separated from the water bodies intended for use by hotels and spas. This environmental improvement is sparking renewed interest in tourism development.

The 1995 JICA study predicted 2,200 hotel rooms at the Dead Sea by the year 2010, which would be around nine hotels. The previously mentioned Sigma study for the Dead Sea estimated that 33,000-34,000 total bed units could be developed, which included approximately 24,000 hotel rooms. (Our interviews gave conflicting numbers, perhaps indicating changes to the original 1997 projections of 12,500 new hotel beds in Suweimeh ("the little piece of weighted gold"), 12,000 at Zara, 6500 holiday villas and condos, and 3000 youth camps.)

Recent development in Suweimeh includes a Movenpick Hotel and a Marriott Hotel, each approximately 250 rooms. Earlier developments in that area, all of which JVA has now connected to sewer lines, include the Dead Sea Rest House, the Al Bar Al-Baydaa Rest House, and the renovated Dead Sea Spa Hotel (Nazzal). Since JVA announced that nine other plots of land were available for investment, JVA has agreed to rent four of those plots for hotels, other tourist facilities, a health spa, and a water sports center. Lessees include: Sharm from Egypt, Mid from unknown, the Jordanian Water Resort Company, and Belfesta. The total investment is projected at JD 250 million.

JVA indicated that there will be a future announcement to offer a tourist village site of 900 dunums to the private sector to construct hotels, resorts, commercial, villas, and apartments. The location is unclear. Other parcels along the Dead Sea that have already been dedicated for specific land uses include the D1 zone (2000 dunums) to the Ministry of Tourism for the

Suweimeh National Park, and 2 areas in Suweimeh and Zara to the Greater Amman Municipality for local tourism.

During field work with JVA, and using the Sigma plan as a guide, the following projects a parcel-by-parcel land use. During future land use planning, this information should be verified with JVA:

* D1 – Ministry of Tourism
* D2 – Mid Contracting Company has a contract to lease land for hotel, villa, and golf course development;
* D3, D4, D5 – Slated for private sector development – no current leases. Sports city perhaps. NE of D3 found a mosaic. South of zone 3 – Movenpick staff housing.
* Dead Sea Rest House – Could be replaced by three star hotel.
* Youth Camp – natural with tents/no permanent structures (between DS Rest House and boat station)
(nearby is army land and across the road is a police station)
* Boat Station – paddle boats or canoes
* Existing five and four star hotels plus new developments: ACCOR has not begun due to a flooding issue; Jordanian Saudi Company is planning a 450 room hotel; Sun Days International is planning a 100 room hotel for local tourism.
* Land owned by the Royal Family
* Zone 5 and 6 – Proposed tourist village and private villas, including JVA employees' land, across the road on the ridgeline; 2 private villas already exist
* South of Zone 6 would be the Bella Vista Company Sheraton (Egyptian owned)
* Social Security parcel
* Open wadi area
* Zone 7 (yellow) – Greater Amman municipality's local tourism facilities including shops on private beach (near the pump station and waste water treatment plant and power station)
* From the power station south is open beach land; Sweimeh to Zara is about 15-20 km of natural rugged coastline (checkpoint tower and pull-off area for parking)
* Zone 15/Zara begins at the existing local restaurant with the natural springs on the other side of the road
* Dubai investor is looking at 20 dunums, now a military area, for hotel development
* On ridgeline is MOTA's Dead Sea Panorama complex near Ma'in
* Gravel pit area – JVA has told the operator to move and clean up the site; private land on both sides
* Agricultural farmland – very picturesque (tomatoes and potatoes)
* Mujib water pipes to carry water from Mujib to Amman
* Mujib Bridge and Nature Reserve – RSCN is building a camp site and visitors centre
* Royal Family land
* Developable area across road from concrete batching plant – wonderful palm trees in wadi; planned for villas, housing; no infrastructure yet

Wadi Mousa is an example of extensive hotel development and obtrusive commercial signage that has primarily hurt local investors and changed the quality of the entrance to Petra. It would be unfortunate to see the same kind of economically unfeasible

development along the Dead Sea shoreline. If the projected number of *24,000 hotel rooms* is correct, approximately *96 hotels* and other types of lodging would be built (average, low to mid-rise hotel similar to the Movenpick or Marriott Dead Sea is 250 rooms).

On the Israeli side of the Dead Sea, 41,500 rooms are supposedly projected. However, in 1995, Eilat (an urbanized tourism town) had only 7000 rooms or approximately 28 hotels that sufficiently accommodated 805,000 visitors at a healthy occupancy rate of 80%. Of that number, 55% were local tourists. As a comparable, according to our web research, Sharm El Sheikh in Egypt, an urbanized shoreline that is of a very different character than the Dead Sea, offers *42 hotel/motel/bed and breakfast accommodations,* including ten 5 star hotels and two 4 star hotels. A rule of thumb for a well touristed Western city of ½ million people is capacity for 40 hotels. According to the Washington D.C. Convention and Tourism Corporation, there are *25,000 hotel rooms* in Washington, D.C., 1000 more than the number projected for the Jordan side of the Dead Sea.

3.4 Design and Policy Recommendations

JVA has already utilized environmentally sensitive clustering of infrastructure and hotel and other forms of development in the Suweimeh area, where environmental conditions are less sensitive. Many of those interviewed agreed that development should be clustered at Suweimeh, and that Zara should be protected and restricted to low lying nature reserve lodging that blends with the natural landscape.

Future land use plans should carefully analyze the benefits of clustering and buffering to protect the "golden egg" for which many tourists visit the Dead Sea, preserving the more fragile central area as a continuous protected scenic corridor of high historical and natural value. The Sigma plan included conservation or protected areas (archaeological zones, beaches, and nature reserves) and some design recommendations. They recommended that sidewalks link access and service roads, and footpaths link hiking, recreation, and archaeological sites. Parking would be screened and landscaped, and there are recommendations to minimize cut and fill. Potable water would be provided by the side wadis, and recycled treated effluent (extended aeration treatment to produce 75 percent water recovery) would be used for irrigation. Policy recommendations included height limits on construction. The Ministry of Water and the Ministry of Tourism agreed to a height limit of mid-rise construction (4 floors).

Sigma also recommended that traditional design elements (adobe and stone) be integrated with the natural landscape, although there were no specific design standards. The study recommended native plantings including date palms on both sides of the highway at 20 meter intervals and acacia trees along the access road. They also recommended banning television antennas and under-grounding power lines.

To improve design and economic viability and minimize the impact of development on the Jordan Valley's natural features, we propose that design standards coupled with environmental standards create a holistic land use approach. For example, environmental standards could address sensitively terraced hillsides, site irrigation and recycling of gray

water, and the use of Xeric salt resistant plants to soften the landscape and preserve the wadis. Policy research and recommendations associated with land use planning could include the status of EA or EAI protected area legislation, availability of "green" hotels programs and environmental audits, campsite standards, recycling and garbage collection along the Dead Sea, gray water for irrigation, coordinated public transport, customs and export regulations impacting supply and demand, institutional project management amongst the major players including project coordination, programming, and financial management, development control, implementation and marketing, and operations, maintenance and monitoring. Agencies currently involved include JVA, the Ministry of Tourism and Antiquities (MOTA), the Jordan Tourism Board (JTB), the Ministry of Religion, the Ministry of Planning, the Ministry of Agriculture, and the Ministry of Municipalities and Rural Affairs.

3.5 Tourism Opportunities and Community Based Tourism

Along with hotel development and other tourism services, there is a strong need for an effective information center at the Dead Sea to provide clean public bathrooms, printed information, an educational video about the vast tourism offerings of Jordan, and a place to post rangers who encourage visitor surveys. Another important visitors center is being created at the Dead Sea Panorama Complex. It is being constructed by MOTA and JICA on the upper ridgeline above the Dead Sea near the Ma'in hot springs. A goal of the project is to provide dramatic views of the Dead Sea and diversify the tourism base from archaeology to culture/nature tourism.

We understand that Zara is planning to renovate a hot springs hotel in the northern part of the Jordan Valley at Himmah, just south of Umm Qais, which would provide much needed hotel facilities in that area, and hopefully stimulate micro-enterprises for the local village. The only handicraft we saw in the area were attractive but bottomless baskets for fruit, but having a successful hotel could create a catalyst for opening a handicraft training and production center, which would in turn become part of the tourism experience.

There is also a need for various types of transit. A transportation management strategy should be created. Although new roads are in place, there is little public transit service between Amman and the Dead Sea in terms of taxis and comfortable buses. Land use plans should analyze areas for private investors interested in transit for tourists, such as a private local jeep system with an interesting identity (bird murals perhaps) to take visitors on regional nature and cultural heritage based day trips. Once this need is met, the Dead Sea can capture the longer term visitor as well as the day tripper (business visitors) from Amman, a potentially huge market.

In order to lengthen visitor stays to the Dead Sea, there should be private investment opportunities for night-time activities. For example, there might be an opportunity for a souk with local food stands, traditional to Arab society. This type of night market has been highly successful for tourists and locals in Malaysia and Singapore, although the quality of the night markets in Thailand have suffered. A souk could be designed to project a strong cultural identity, enhancing the visitor experience.

High tech investments have been discussed to lengthen visitor stays. Although it is very difficult to create authentic sound and light shows that do not harm sites, some do exist such as the one in Chichen Itza, Mexico, which is highly educational and effective. Tech tourism was mentioned, or visitor experiences through tours of production plants.

Under *educational tourism*, there is an opportunity to tie affordable Jordanian university programs to new Dead Sea tourism facilities. Many universities are not more than an hour's drive from the Dead Sea. University professors could be involved in international agricultural research and training, guide and hospitality training, language facilities, regional archaeological centers, Islamic studies, and culinary institutes. There remains an untapped opportunity in Jordan for international, volunteer supported scientific digs, community improvement projects, and school camps, and other programs, such as those offered by Crow Canyon and Earthwatch. Because of the fame of the Dead Sea, there is also opportunity for winter based *meetings and incentive/conference* tourism, tied to any of the resources in the area or simply to the warm winter weather.

High quality handicraft production is one of the key elements of successful tourism, and authenticity and cultural identity leads to successful marketing and selling. Training programs are important, particularly in the Jordan Valley where few handicrafts are currently produced. Adaptive reuse of buildings is common in Madaba and Amman, and perhaps offers potential for historic preservation and cultural identity in the Jordan Valley. RSCN has worked with local people to produce interesting, identifiable nature and agricultural handicrafts at Dana and elsewhere, and this type of authentic branding should be the model for handicraft development throughout the Jordan Valley.

In addition to nature based products, there can be other types of authentic handicrafts, adaptive reuse of Bedouin designs, for example. There is a strong need to bring in international designers, through programs like Aid to Artisans or university art programs, to assist local people with understanding design and production techniques, the international market, and the link between creative, affordable but high quality products and profitable micro-enterprise. There is a strong need in the Jordan Valley to harness and enhance local skills and products to assist in the reduction of poverty.

Although a socio-economic survey would indicate local people's interests and abilities, ideas for involvement in tourism through traditional Jordanian activities include drumming and dance classes, bread baking and cooking, knitting and weaving wool, basket making, village and school tours, oral histories, art and jewelry displays and design, agricultural production including olive oil processing and dried fruits, fresh fruit juice bars, traditional coffee kiosks, ranger talks and guided bird walks, bed and breakfast lodging, etc. Advertising should encourage tourists to buy locally made goods and services. Hotels should follow local sourcing guidelines for fruit, vegetables, meat, fish, and interior design elements.

For more *effective marketing,* linkages could be established between the local communities, JVA (marketing unit within the Investment Development Directorate) and the Investment Promotion Corporation, whose mandate is to market Jordan internationally, and the Jordan

Tourism Board. Mass tourism is probably not the answer for the Jordan Valley and Dead Sea. A successful marketing campaign, like "Amazing Thailand's cultural heritage campaign," which brought that country out of its financial crisis in 1997, or the current Belize eco-tourism campaign, which uses E-commerce and is drawing hundreds of thousands of tourists, is needed for the Jordan Valley. Assuming that the Jordan Valley puts long-term sustainable land use planning in place, successful advertising that draws locally, regionally, and internationally might sound something like the following:

"The Dead Sea, adjacent to Wadi Mujib, a World Heritage site. Relaxation and gastronomy amidst a stretch of protected coastline, where the history of the region is truly unique…antiquity without equal, a spiritual journey…sunbathe and swim in the salty waters… visit fascinating museums…shop for local high quality handicrafts…drop into a café for an Arabic coffee with divine pastries or happy hour with mezze and argeleh...relax to traditional oud music, drums, and other forms of warm hospitality, while watching the sun set over the Dead Sea… dine in ancient silence and architectural splendour…enjoy the best of local culinary dishes as well as the finest international flavors…take a culinary tour in Mediterranean cooking at the Dead Sea Cooking School…a relaxing holiday for every taste."

Or for a fitness holiday: "Combine the purity of the landscape with warm winter days of countless leisure activities including tennis, cycling, swimming, desert hikes through nature reserves and archaeological treasures, belly dancing classes, and wellness centres offering a range of modern treatments for restoring the body and mind."

Jordan is a vast and deep cultural vessel, cut of beauty and ancient traditions. Recognizing cultural attributes, preserving and sometimes reinterpreting for other cultures, and colorfully and artfully presenting designs…this is the key to successful international marketing and merchandising.

4 Description of the Work Plan including Outputs or Results

To create a Land Use Study or a Comprehensive Land Use Plan, the anticipated schedule is five to six months of planning and design time. The Work Plan for Options A and B, the Land Use Study, or the Work Plan for Options C and D, a Comprehensive Land Use Plan, would occur in two phases. The Options differ in number of team members and scope of information and data gathering.

4.1 Proposed Team

Proposed Team under Options A and B, Land Use Study

- *US Project Manager and Land Use and Tourism Planner* (as detailed below),
- *Local Information Specialist*,
- *Local Architects and Engineers*,
- *Local GIS Specialists* (This information has been revised based on communications from Philipp Magiera, GTZ, i.e., all options assume JVA, not a local private firm, is doing GIS digitizing and printing of all maps. If this is not the case, the budget would change.)

Proposed Team under Options C and D:

- *US Project Manager and Land Use and Tourism Planner*,
- *Local Information Specialist*,
- *Local Architects and Engineers*,
- *Local GIS Specialists* (This information has been revised based on communications from Philipp Magiera, GTZ, i.e., all options assume JVA, not a local private firm, is doing GIS digitizing and printing of all maps. If this is not the case, the budget would change.)

    - *Local Environmental Consultant* – Gathering of environmental information including an environmental analyses of protected areas and information on "green" hotel and visitor center operations and recycling of grey water for irrigation, and performance of a carrying capacity study of the Dead Sea area (# of visitors who can use the site comfortably without alteration, erosion or destruction of the site, the local community, or the visitor experience),

    - *Local Sociologist* – Create and conduct a local survey/community interviews (to be reviewed by Team Leader); create and coordinate stakeholder meetings to determine interests and capabilities for sustainable tourism, sustainable agriculture, and other forms of industry; analyze training needs.

    - *Local Economist - A*nalyze the market realities of proposed land uses including tourism development areas and provision of infrastructure/services and water pricing,

- *Local Transportation Engineer* – Briefly review the preliminary overlay drawings and land use recommendations to determine whether or not projected tourism routes are workable.

The budgets also presume that either USAID or JVA provides vehicles and drivers for site visits to the Jordan Valley. Projected budgets include all other expenses, i.e, travel, per diem, materials (paper, mylar, velum, film and processing, blueprints), printing (overlays/no GIS printing, limited laser photos, stock, covers and binding), communications (faxes, email, not more than 2 Federal Express international couriered drawings) and computer use. Reports will be locally produced and consultants will not incur any air freight costs.

4.2 Work Plan and Budget Options – Costs and Results

Option A **LAND USE STUDY**

A. **Fees + Expenses**

Consultant	**Rate (US$) a/**	**Unit (day)**	**Subtotal**	**Responsibilities**
Consultant	Rate (US$)	Unit (day)	Subtotal	Responsibilities
1 Expat Tourism and Land Use Planner	1,000 a/	24	$24,000	Advisory - not project manager; one field visit for participation in tourism and land use planning charrette; editing of reports based on information gathered by local consultants
2 Jordanian Information Management Firm	480	35.5	$17,000	Project Manager - responsible for all information gathering, land use criteria land use planning charrette, client presentations, writing and production of abbreviated final report.
3 Jordanian Architecture and Engineering Firm	480 b/	29	$14,000	Responsible for receiving information from project manager, participation in tourism and land use planning charrette, creation of 15 overlay land use maps, no parcel ownership overlay map, and coordination of GIS with JVA.
Subtotal		**88.5**	**$55,000**	

a/ For budget purposes, we are proposing a "loaded rate," i.e., one that includes travel, insurance, overhead, and fees, and b/ The loaded rate for this firm includes fees, overhead and all reimbursable expenses (including per diem, supplies, blueprints, mylar, velum, reproduction costs, printing). The reimbursable expenses are estimates and would need to be negotiated with the firm for more precise costs.

Option B **LAND USE STUDY**

B. **Fees + Expenses**

Consultant	**Rate (US$) a/**	**Unit (day)**	**Subtotal**	**Responsibilities**
1 Expatriate Project Manager and Tourism and Land Use Planner	1,000	40.00	$40,000	Project management, land use and tourism planning, tourism linkages, site visits, completion of photo survey, management of data, writing and editing of full report, client presentations.

2 Jordanian Information Management Firm	480	25.00	$12,000	Information gathering and data management, no site visits, land use criteria, land use planning, bubble diagrams, no presentations.
3 Jordanian Architecture and and Engineering Firm	480	38.00	$18,000	Site visit, land use planning charrette, creation of 15 overlay land use maps based on information provided by information management firm, no parcel ownership map, coordination of GIS with JVA, project manager will create 4 copies of report at firm's office and firm will do layout, printing and binding.
Subtotal		**103.00**	**$70,000**	

a/ For budget purposes, we are proposing a "loaded rate," i.e., one that includes travel, insurance, overhead, and fees, and b/ The loaded rate for this firm includes fees, overhead and all reimbursable expenses (including per diem, supplies, blueprints, mylar, velum, reproduction costs, printing). The reimbursable expenses are estimates and would need to be negotiated with the firm for more precise costs.

Option C **Comprehensive Plan**

C **Fees + Expenses**

Consultant	**Rate (US$) a/**	**Unit (day)**	**Subtotal**	**Responsibilities**
1 Expatriate Project Manager and Tourism and Land Use Planner	1,000	50.00	$50,000	Project management, land use and tourism planning, tourism linkages, site visits, completion of photo survey, management of data, NGO and community meetings, client presentations, and preliminary and preliminary and final presentations to clients.
2 Jordanian Information Management Firm	480	29.50	$14,000	Information gathering and data management, site visits, land use criteria, land use planning, bubble diagrams, presentation to clients.
3 Jordanian Architecture and and Engineering Firm	480	42.00	$20,000	Site visit, land use planning, gathering of infrastructure information, creation of 18 overlay land use maps, management firm, coordination of GIS with JVA, project manager will create report at firm's office and firm will be responsible for layout, printing and binding of 6 copies of final report.
4 Jordanian Environmental Firm	480	21.00	$8,000	Gathering of current environmental data, environmental analysis to include carrying capacity study; recommendations.
5 Jordanian Sociologist	300	20.00	$6,000	Creation of community survey, meetings, survey of three local communities, one in each zone, analysis of results in regard to economic development and tourism.
6 Jordanian Economist	300	13.33	$4,000	Analysis of proposed land uses in regard to current and future economic conditions, to include feasibility information and

				cost/ benefit studies (water and other services).
7 Jordanian Transportation Engineer	300	6.66	$2,000	Analysis of proposed land uses in regard to current transportation network and recommendations for necessary improvements.
Subtotal			**$104,000**	

a/ For budget purposes, we are proposing a "loaded rate," i.e., one that includes travel, insurance, overhead, and fees, and b/ The loaded rate for this firm includes fees, overhead and all reimbursable expenses (including per diem, supplies, blueprints, mylar, velum, reproduction costs, printing). The reimbursable expenses are estimates and would need to be negotiated with the firm for more precise costs.

Option D **Comprehensive Plan**

D. **Fees + Expenses**

Consultant	Rate (US$) a/	Unit (day)	Subtotal	Responsibilities
1 Expatriate Project Manager and Tourism and Land Use Planner	1,000	60.00	$60,000	Project management, land use and tourism planning, tourism linkages, site visits, completion of photo survey, management of data, NGO and community meetings, creation of pilot project framework, policy recommendations (implementation guidelines and design and signage standards, client presentations, preliminary and final presentations, comprehensive final report.
2 Jordanian Information Management Firm	480	33.33	$16,000	Responsible for approval letters from JVA re site visits and document procurment, data management and report writing, participation in planning and design standards and land use planning, site visits creation of land use criteria, bubble diagrams, no responsibility for GIS.
3 Jordanian Architecture and and Engineering Firm	480	43.75	$21,000	Site visit, land use planning charrette, gathering of infrastructure information, creation of 18 overlay land use maps, coordination of GIS with JVA, project manager will create report at firm's office and firm will be responsible for layout, printing and binding of 6 copies of final report.
4 Jordanian Environmental Firm	480	20.80	$10,000	Gathering of current environmental data, environmental analysis to include carrying capacity study; pilot project analysis, recommendations.
5 Jordanian	300	23.33	$7,000	Creation of community survey,

				meetings,
Sociologist				survey of three local communities - one in each zone, analysis of results in regard to economic development and tourism, including pilot project.
6 Jordanian Economist	300	16.66	$5,000	Analysis of proposed land uses in regard to current and future economic conditions, to include feasibility information and cost/ benefit studies (jobs, water, other services), including pilot project.
7 Jordanian Transportation Engineer	300	10.00	$3,000	Analysis of proposed land uses in regard to current transportation network and recommendations for necessary improvements.
Subtotal			**$122,000**	

a/ For budget purposes, we are proposing a "loaded rate," i.e., one that includes travel, insurance, overhead, and fees, and b/ The loaded rate for this firm includes fees, overhead and all reimbursable expenses (including per diem, supplies, blueprints, mylar, velum, reproduction costs, printing). The reimbursable expenses are estimates and would need to be negotiated with the firm for more precise costs.

5.0 Framework for Pilot Project with Estimated Costs

The best source of renewable energy is solar, which is abundant in the Jordan Valley. The biggest constraint to successful development in the Valley is the lack of water. Another constraint is lack of training.

The Project Planner would analyze the possibility of a sustainable, low-tech solar, low-water agro-tourism project that builds upon new industry, such as appropriate Xeriscape and fish farming practices, combined with local training in operations and management and handicraft production, to become a tourism attraction. The objective would be to sustainably match tourism product with market demand.

Working with the Royal Society for the Conservation of Nature (RSCN), Friends of the Earth Middle East, and the Near East Foundation, the pilot project would focus on one area of the Jordan Valley and recognize resource linkages, including the potential for aquaculture, the Jordan Valley's human resource capability, and its importance as an ecological corridor and migratory flyway and key habitat for birds and bird-watchers.

Throughout the world, agro-tourism is a booming industry. For example, the University of Chile is working with a small community called Via Secca to create agro-tourism through local fruit production and solar ovens that bake traditional breads. On a larger scale in Cornwall, England, the Eden project, a $120 million greenhouse and renewable research facility, is booming. A year after it opened, the 34 acre agro-tourism facility has become one of Europe's most popular and celebrated tourist attractions. The next phase for Eden is a campus where political and business leaders and scientists can get together to share their knowledge.

If there was an export component to the pilot project, we could look to USAID's model in Mozambique (MozLink) that allows world class business leaders to mentor local business owners (e.g., Cargill, Chiquita Brands, General Mills, etc.).

Annex A Documents Reviewed

Azar, Wasef, *Social and Economic Survey of the East Jordan Valley* (Department of Statistics, 1973).

Al-Khoshman, Mahmoud A., *The Environmental Consequences of the Industrial and Energy Projects in the Dead Sea Area* (EcoPeace Middle East Environmental NGO Forum, 1996).

Al-Masri, Wael, Chemonics International, Najjar, Dr. Mohammad, MOTA, and Kawar, Ramzi, CDG, *Phase II Sites Selection Report - JSTD Sites* (Ministry of Tourism and Antiquities and USAID, December, 1996).

Bosley, Roy, The Harza JRV Group, *Jordan Rift Valley Sector Studies* (The World Bank, August, 1997).

Bosley, Roy E., *Strategic Planning Project, Phase II Paper,* (USAID and Jordan Valley Authority, 1997).

Chesrown, Sandra*, Jordan Tourism Board Capacity Building Report (*AMIR Project, Chemonics International, USAID, 2002).

COWI Consult of Denmark and Royal Scientific Society, *Industrial Pollution Control Project in Jordan, Project Components 1-4 (*Ministry of Planning and The World Bank, 1994).

Chesrown, Sandra, Chemonics International, *Jordan Sustainable Tourism Development Final Report (*Ministry of Tourism and Antiquities and USAID, February, 1997).

Donnan, Graeme, *The King's Highway (*Al Kutba Publishers, 1994).

Dajani, Jarir, *A Baseline Socio-economic Study of the Southern Ghors and Wadi Araba* (Stanford University and USAID, April, 1979).

Dajani, Hazleton, Rhoda and Sharry, *An Interim Evaluation of the Jordan Valley Development Effort: 1973 – 1980* (USAID, 1980).

De la Torre, Marta, Editor, *Protecting Open Spaces in the Middle East, The Conservation of Archaeological Sites in the Mediterranean Region (*The Getty Conservation Trust, 1997).

Daoud, Raed, EnviroConsult, *Transportation Projects and Potential Environmental Impacts, (*EcoPeace, 1996).

Dalal, Khalid, *Jordan Unveils Protecting the Dead Sea Initiative (*The Jordan Times, September 2, 2002).

Harza Engineers, Camp Dresser, Raytheon, Bechtel, and Dupont Co., *Jordan Rift Valley Development Symposium* (Publisher unknown, 1995).

Hosein, Hanson R., *The Dying Dead Sea (*Web NBC News, October, 1999).

Halaby, Jamal, *Jordan Seeks Cooperation with Israel to Save the Dead Sea* (Associated Press, July 23,2002).

Haddadin, MJ, *TOR Master Plan – Integrated Development of the Jordan Rift Valley* (USAID, 2001).

ICOMOS Committee on Cultural Tourism, *Tourism at World Heritage Cultural Sites: The Site Manager's Handbook (*ICOMOS,1993).

Knight, Manuel and Nippon Koei Co., PADECO Co. and Regional Planning International, *Tourism Development Plan: Interim and Final Reports (*Ministry of Tourism and Antiquities, July 1995).

Mahasneh, Dr. Dureid, *New Elements of Development in the Jordan Valley* (The Jordan Times, July 2, 2001).

PADCO, *Settlement Planning and Housing Recommendations for the East Ghor Valley* (Jordan Valley Commission, 1973).

PADCO, *Development Report for Town Planning in the Jordan Valley (*Jordan Valley Commission, 1976).

Piccirillo, Father Michelle, *The Mosaics of Jordan (*Sotheby's London, 1993).

PA Consultants, *The Jordan Valley Authority's Strategic Plan, 2003-2008* (USAID, Jordan Valley Authority, July 2002).

PA Consultants, *Regional Land Use Planning and Land Management Strategy for the Jordan Valley Authority* (USAID, Jordan Valley Authority, July 2002).

Qasem, Dr. Subhi, *Future Adjustment of the Agricultural Systems in the Jordan Rift Valley, Volume I, The Synthesis Paper (*GTZ, November, 1995).

Raz, Eli, *Environmental Impacts of Tourism Development Projects in the Dead Sea Area* (EcoPeace, 1996).

Sharry, David Gregory, *Jordan: Irrigation and Area Development in the Valley* (USAID, February, 1981).

Staff Near East Foundation, *Participatory Rapid Appraisal* (Near East Foundation, undated - late 1990s).

Staff, Friends of the Earth Middle East, *Let the Dead Sea Live, Concept Document, Dead Sea Basin Biosphere Reserve and World Heritage Listing,* (FOE, 2000).

SIGMA Consulting Engineers, *Tourism Development Project of the East Coast of the Dead Sea - Part One – Zara Development Area, Part Two – Suweimeh Development Area (*Jordan Valley Authority and Ministry of Water and Irrigation, May 1997).

Sawalha, Francesca, *Jordan to Make Case for Dead Sea at Earth Summit* (The Jordan Times, August 30, 2002).

Staff, Friends of the Earth Middle East, *Middle East Environment Watch* (FOE*,* Summer 2002).

Staff of EnviroConsult, *Water Resource Management* (Web EnviroConsult, January 16, 2003).

Technical Staff, *Integrated Development of the Jordan Rift Valley, (*The World Bank, Governments of the Hashemite Kingdom of Jordan and Israel, October, 1994).

TURAB, *The Holy Sites of Jordan (*USAID, 1996).

Tech International Inc. with Louis Berger International, *Jordan Valley, Dynamic Transformation: 1973-1986* (USAID, Jordan Valley Authority, 1986).

Author Unknown, *Cultural Heritage and Tourism Development*, (World Tourism Organization, 2001).

Ware, John Alex, *Housing for Low Income Rural Families in Less Developed Countries: A Case Study, Jordan* (Publisher Unknown, 1978).

Weber, Thomas, *Umm Qais, Gadara of the Decapolis* (Al Kutba, 1990).

Author Unknown, *Tourism and Poverty Alleviation (*World Tourism Organization, 2002).

Author Unknown, *Jordan Vision 2020,* (AMIR Project, USAID, 2002).

Author Unknown, *Jordan, The Southern Ghors Integrated Development Project (*www.arabfund.org, January 16, 2003).

Author Unknown, *Jordan Rift Valley Project (* www.mwi.gov.jo, January 16, 2003).

Author unknown, *Interim Evaluation of Jordan Valley Development, 1973-1980* (USAID, 1980).

Annex B Meetings Conducted

Organization	Name	Title
Private Sector Policy Initiative, AMIR Program	Greta Boye	Team Leader
Water Office, USAID Economic Opportunities Office, USAID Private Sector Office, USAID	Setta Tutundjian Abu-Jamra Jim Barnhart Jamal Al-Jabiri	Project Manager Acting Director Management Specialist
Ministry of Water and Irrigation and JVA Investment Unit, JVA Project Monitoring, JVA	Eng. Zafer Alem Ikram Dagistani Gloria Kandah	Secretary General Director Head
Ministry of Tourism and Antiquities, Baptism Site Department of Antiquities, Excavations	Eng. Dia Madani Dr. Mohammed Najjar	Head Director
NGOs Royal Society for the Conservation of Nature Friends of the Earth Friends of the Earth Near East Foundation Near East Foundation	 Khaled Irani Munqeth Mehyar Abd Sultan Hajem Halaseh Majdi Al-Qorom	 Director General Chairperson Project Manager Country Director Program Manager
Private Sector Architects CDG Consolidated Consultants Dar Al-Omran	 Ramzi Kawar Jafar Tukan Wael Al-Masri	 Architect & Information Spec. Architect Architect